

What are the barriers to the global elimination of lead paint?

While awareness of the hazards of lead in paint has grown, poor funding, local production, continued industrial use and a developed/developing country regulations gap have stymied progress towards its elimination, Ginger Hervey reports

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This was supposed to be the year that countries and companies around the world eliminated one of the oldest known chemical hazards to human health: lead in paint.

But 2020 is heading towards its final months, and this goal has not been reached. Lead compounds are still found in paint products in most countries in the world despite the fact exposure to lead has had devastating effects, primarily on children in developing countries: Unicef, in collaboration with the NGO Pure Earth, has estimated that one in three children globally has lead in their blood at a level that impairs brain development and is linked to behavioural problems later in life.

Exposure does not just occur from toxic flecks chipping off old buildings, painted with lead before the world knew better. In fact lead paint is still being produced – by both small, local companies and large multinationals – and sold across Africa, Asia, Latin America, and even in the US and Europe.

The UN environment programme (Unep) and WHO, through the voluntary Lead Paint Alliance (LPA) founded in 2011, aimed to persuade every country in the world to put a law in place banning lead paint by this year. But to date, just 77 (40%) countries have any restrictions on the substance –

and less than ten have set the LPA's recommended limits for lead in industrial paints, as well as those for consumer use.

Since the LPA was founded, NGOs like the International Pollutants Elimination Network (Ipen) and Occupational Knowledge International have tested thousands of paints in 59 countries, mostly in the developing world. Ipen's website says it found that "many of these paints contained very high levels of lead above 10,000 parts per million (ppm) of the dry weight of the paint." The upper limit recommended by the alliance is 90ppm.

Local producers

Often based in developing countries, companies producing lead paint are small, local operations and they either don't know about the health effects of the substance, or they are trying to capitalise on the slightly cheaper material. Lead is used in paint as a pigment, creating a specific colour depending on the compound used, or as a drier, lessening the time paint takes to dry and making it more durable. NGOs and the World Coatings Council, an industry body and partner of the LPA, are doing a huge amount of work to host workshops with small companies so they move to a safer alternative, says Tom Bowtell, the council's industry stewardship committee chairman.

The “biggest concern” globally is lead used in consumer paints for use in and around homes and schools, he says. The health concerns for these paints are “more poignant and obvious”.

But there’s another type of lead paint production – one that is usually not regulated, even if a country has a lead paint law, and not limited to small companies. Government, NGO and industry experts consulted for this article all said that some large, multinational companies still put lead compounds into paints for industrial uses.

Sherwin Williams, the world’s second-largest paint manufacturer, is one of those that still makes and exports some products that contain lead, Antonio Dias, an attorney for the company, told Chemical Watch.

Industrial products

The company doesn’t sell consumer paint containing lead anywhere in the world, Mr Dias said. But “some of our high-performance industrial products contain lead to meet performance specifications.”

There’s disagreement on whether the heavy metal is still justified for some specialised uses. Unep’s chemicals chief Monika MacDevette, speaking on behalf of the LPA, told Chemical Watch that there is an alternative available for all lead-containing pigments, even for industrial applications like heavy-duty coatings, although they may be more expensive. Mr Bowtell agrees.

“Even if the performance isn’t quite as good ... you can get pretty close [by] spend[ing] a bit more money,” he says. “My view is we just have to suck that up as an industry; that’s the implication of moving to a safer and less hazardous technology.”

Some large multinational companies have phased out lead from all their products, consumer and industrial: Dutch manufacturer AkzoNobel did this in 2011; and a spokesperson for Pittsburgh-based producer PPG confirmed to Chemical Watch that as of this year, the company had eliminated lead from its portfolio.

Specialist uses

But a spokesperson from the trade group International Lead Association (ILA) says there may “still be a few situations where industrial use of lead paint may be justified – such as for specialist marine uses”.

Mr Dias says there are “still a couple of uses” where lead is necessary to meet performance requirements, such as coatings for solar mirrors.

Sherwin Williams did not respond to requests to provide data on the volume of lead-containing products the company produces, where they are sold, and for which specific industrial uses.

A further challenge is that what is considered an “industrial paint” is not always clear because there is no widely-agreed definition separating these from consumer paints.

“While multinationals may claim that they only produce for a narrow, industrial application market, we see in many countries that, for example, anticorrosive paint is sold over the counter,” says Sara Brosché, Ipen’s lead paint elimination project manager.

And most countries’ laws do not specifically ban lead in paint for industrial uses. This includes the US where lead is restricted in children’s products and in consumer paints, but not for these uses. “So you can’t paint your house with lead paint, but you can paint the water tower next to your house with lead paint,” says Perry Gottesfeld, director of NGO Occupational Knowledge International. “Or the electric utility pole, or the pipe, or the yellow line down your road.”

The LPA says it advises countries to ban lead in all paints, even if the approach is phased-in, starting first with consumer, and then industrial, paints. Currently, less than ten countries have implemented the LPA’s recommended 90ppm lead limits for domestic and industrial paints, according to Chemical Watch’s analysis of the alliance’s 2019 progress report (see box).

“So lead is still used in paints, in the US and around the world,” Mr Gottesfeld said.

Countries that have passed laws with the LPA-recommended limit of 90 (or 100) ppm for industrial and consumer paints

- Israel (90ppm for all paint)
- Kenya (90ppm for all paint)
- Nepal (90ppm for all paint)
- Philippines (90ppm for architectural, decorative, household and industrial paint)
- Switzerland (100ppm for all paints)
- Thailand (100ppm for all paint)

Countries where it's unclear if their laws cover industrial paints

- Canada (90ppm for paints and certain other surface coating materials)
- Ethiopia (90ppm for paint)
- Iraq (90ppm)

Tanzania (90 or 100ppm lead limit, depending on the type of paint)

Source: LPA 2019 progress report

Restriction caveats

The European Union also has caveats in its lead paint restrictions. There is a REACH restriction prohibiting the use of some lead compounds in paint used by the general public, and some compounds – but not all – are subject to authorisation.

A contentious application for authorisation by Canadian paint manufacturer Dominion Colour Corporation (DCC) to keep selling lead chromates in the EU, brought into question arguments that industrial uses of lead paint are highly specialised and have no available alternatives, said Dr Brosché. She said the application, which covers uses ranging from industrial coatings to road markings to plastics, is “extremely broad”.

There's no concrete data on how much lead paint is produced around the world or where. But considering the DCC case, “I think it is too easy to say that this only is only produced and used in developing countries,” Dr Brosché said.

DCC will **not reapply** for permission to continue selling pigments containing lead chromates in Europe beyond May 2022, when its current authorisation expires, according to Echa.

Impact of exposure

Of course, paint is not the only way people are exposed to lead. Historically, lead in gasoline was a major source of exposure, and more recently, informal recycling of lead-acid batteries.

But taken together, exposure has been massive. Around 1 in 3 children around the world – up to approximately 800 million – have lead in their blood at or above 5 micrograms per decilitre ($\mu\text{g}/\text{dL}$), a level at which the US Centers for Disease Control and Prevention has observed adverse effects (see box).

Lead enters our bodies when we swallow contaminated dust, food or water, or breath in particles that have been released into the air. The heavy metal settles in the brain, kidneys and liver, and is also stored in teeth and bones, where it accumulates over time.

Young children are “particularly vulnerable” to the exposure, according to the WHO, because they are more likely to put toys or their hands in their mouth, increasing the potential for ingestion. From any given source, the WHO said, children absorb 4-5 times more lead than adults.

Even small amounts of the substance have lasting effects: preschool lead exposure has been linked to a decline in IQ over a lifetime.

Researchers at NYU Langone Health in 2013 found that in developing countries, the economic cost associated with brain damage from childhood lead exposure equalled \$977bn, or 1.2% of the world's GDP.

Meanwhile, more than 900,000 premature deaths per year are attributed to it, according to a 2019 Unicef report.

When medical journals first began documenting the hazards of lead paint in the late 1800s, and throughout most of the 20th century, it was considered an issue for the industrialised world. But that has since changed. The researchers from NYU found that the “largest burden of lead exposure is now borne by low- and middle-income countries.”

This is due in part to a growing middle class in developing countries, and subsequent rise in disposable income and consumerism. “You know, it's a part of being middle class, painting your house,” Mr Gottesfeld said.

Widening gap

But it's also an example of how the gap is “widening rather than narrowing” between how safely chemicals are handled in developed and developing countries, a topic which has been raised in negotiations on the UN's post-2020 chemicals framework. Lead in paint is one of eight “issues of concern” that the framework **has tried to ameliorate**.

“Most developed countries have lead paint laws,” Dr MacDevette says. “In developing countries, either there are no lead paint laws, or if laws are in place, industry is not [always] able to comply.”

The goal of eliminating lead paint by this year hasn't been met for several reasons. Dr MacDevette points to a summary in the UN's second Global Chemicals Outlook, which cites as challenges "a lack of country-specific data, laboratory capacity, public awareness of lead toxicity, and knowledge of alternatives".

Mr Gottesfeld added that more funding is needed, and that the LPA "has failed to attract anywhere near the resources and financial backing it needs".

Dr Brosché from Ipen pointed as well to the lack of regulations, and capacity to enforce them, in many developing countries. "If you don't have enforced regulations, you will have lead paint on the market," she said.

Although the goal is not yet being reached, experts say interest in the topic, and its visibility, is increasing.

"I do think we have learned a lot in the past ten years and there's a lot of momentum right now," Dr Brosché said.

Dr MacDevette said that "more and more countries have expressed interest and are in various stages of drafting lead paint laws," with 13 more countries close to finishing such drafts. After this year, she said, the LPA plans to review its business plan and set a new deadline for global elimination of lead paint.

This is more important now than ever, said Mr Gottesfeld, as the global paint market has nearly doubled in the last ten years, from \$87bn in 2010 to \$150.7bn in 2020.

"This industry is growing, especially in the developing world," he said. "So unless we're making progress, we're falling behind."

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